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Application of the dinuclear system model to fission process

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Abstract

© 2016 Owned by the authors, published by EDP Sciences.A theoretical evaluation of the collective excitation spectra of nucleus at large deformations is possible within the framework of the dinuclear system model, which treats the wave function of the fissioning nucleus as a superposition of a mononucleus configuration and two-cluster configurations in a dynamical way, permitting exchange of nucleons between clusters. In this work the method of calculation of the potential energy and the collective spectrum of fissioning nucleus at scission point is presented. Combining the DNS model calculations and the statistical model of fission we calculate the mass, total kinetic energy, and angular distribution of fission fragments for the neutron-induced fission of 239Pu.

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